SATURN User Group Meeting: Epsom November 4 2016

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BATTING ORDER

- It was 40 years ago yesterday!
- Bugs in 11.3.12+ (App. E.9)
- Specific Program Upgrades (11.4)
- Long-term Ideas and Objectives

SATURN turns 40!
The Abridged History

- 1 Nov. 1976: Enter John Bolland…
- 1 Dec. 1976: … followed by Mike Hall…
- …and Luis Ferreira (1978?)
- 1981(?): Mike Hall joins Atkins

SATURN Time Line

1976: Science Research Council Grant

1978: 2nd SRC Grant

1982: WS Atkins become distributor

2000: Release 10.1, 32-bit version

2004: OBA Release 10.5

2009: Multi-core introduced: 10.8

2012: Spider Networks: 11.1

2013: SATWIN 11 Interface

SATURN turns 40!
Miscellaneous Milestones

- 1980s: DIDDLE
- 1990s: Elastic Assignment
- 2000s: Spider Networks
- 2010s: GPUs?

11.3.12+ Bugs (E.9)

- P1X – Joyrides with average turn delays may double-count link speed-flow delays

- P1X/PMAKE – Problems editing .dat files which use $INCLUDE files

- P1X – problems with multiple node SLA using UFO files

- Skimming, eg, time with UFO can produce strange results for OD pairs with zero flow.

11.3.12+ SATNET Bugs

- Values of, e.g., link speed-flow power or capacity index in the wrong columns not read correctly.

- 88888 records: An "integer" input field with 1 may not be read as 1.0.

- 44444 records: NOMADS > 10 requires **two** lines of input

SATNET (11.4)

- The TOPUP rules for $INCLUDE where 11111 data appears more than once have been "rationalised" (and DOUBLE = T regardless)

- QUIET now suppresses **all** error message windows.

SATALL (11.4)

- An option to use a Dijkstra tree build rather than d'Esopo introduced: halves CPU time for largest networks (E.g., LoHAM)

- Overall improved convergence – mostly due to simulation improvements

- 11.4 gives different results from 11.3.12U

Simulation (11.4)

- Changes (possibly significant) to lane choice for an X lane at signals

- Minor/major changes to flares, primarily to reduce the sensitivity when queues = flare lengths.

- (Optimistic) Expectation: faster convergence and improved stability

SATUFO (11.4)

- Further improvements to the calculation of .UFO files from .UFC.

P1X (11.4)

- Many small and varied improvements;
- Selecting a (bus) route made easier when there are several hundred to choose from
- Easier to work with $INCLUDE files

Ideas/Objectives:15/16

- Improved tree build algorithms for adjacent zones using Spider networks

- Bi-conjugate Frank-Wolfe

- Ignoring low-weighted iterations in .UFC

- Simulation links with bus lanes

- Filters/flares/lanes/blocking back at roundabouts

- Flow-weighted UFP files for use with multiple time periods (SATTPX)

Long Term Objectives

- Improved tree **correction** algorithms for adjacent intra-sector zones

- Better rules for creating Spider networks dependent on tree-build algorithm

- Pre-processing min-cost "hyper-links" prior to tree building